

CLAIMS

What is claimed is:

- 1 1. A thermal management system comprising:
2 a thermal distribution assembly in at least one of conductive and radiative
3 communication with at least one heat producing element, the heat produced by said at
4 least one heat producing element passing to said thermal distribution assembly, said
5 thermal distribution assembly comprising a plurality of thermal zones.
- 1 2. A system as in claim 1 further comprising a main body having an outlet to
2 facilitate removal of heat from said thermal distribution assembly.
- 1 3. A system as in claim 2 wherein said main body has an inlet.
- 1 4. A system as in claim 2 wherein said thermal distribution assembly is part of said
2 main body.
- 1 5. A system as in claim 1 wherein the heat produced by said at least one heat
2 producing element is removed from said thermal distribution assembly by natural
3 convection.
- 1 6. A system as in claim 1 wherein one of said plurality of thermal zones is in
2 thermal isolation from another of said plurality of thermal zones.
- 1 7. A system as in claim 1 wherein one of said plurality of thermal zones includes
2 said at least one heat producing element.
- 1 8. A system as in claim 1 wherein said thermal distribution assembly comprises:

2 a heat spreading frame;
3 a heat conducting frame coupled to said heat spreading frame, said heat
4 conducting frame in said at least one of conductive and radiative communication with
5 said at least one heat producing element, said heat conducting frame having at least
6 one of said plurality of thermal zones.

1 9. A system as in claim 8 wherein said heat spreading frame comprises a plurality
2 of air vents.

1 10. A thermal management system for a plurality of heat producing elements, said
2 system comprising:
3 a heat spreading assembly;
4 a heat conducting assembly coupled to said heat spreading assembly, said heat
5 conducting assembly comprising a plurality of thermal zones, each of said thermal
6 zones including one of said plurality of heat producing elements.

1 11. A system as in claim 10 wherein a first heat producing element is in conductive
2 communication with said heat conducting assembly, and wherein a second heat
3 producing element is in radiative communication with said heat conducting assembly.

1 12. A system as in claim 11 wherein the heat produced by said first and second heat
2 producing elements is passed to said heat spreading assembly, the heat removed from
3 said heat spreading assembly by natural convection.

1 13. A system as in claim 10 further comprising a housing enclosing said plurality of
2 heat producing elements, said housing having an inlet and an outlet, said housing
3 coupled to said heat spreading assembly.

1 14. A system as in claim 13 wherein said housing comprises a handle, said outlet
2 disposed adjacent to said handle, said housing having a concavity below said handle
3 such that an air flow is directed away from said handle and toward said outlet.

1 15. A system as in claim 14 wherein said air flow is provided by natural convection.

1 16. A system as in claim 13 wherein said plurality of heat producing elements is
2 disposed adjacent to a peripheral edge of said housing such that a thermal air path is
3 facilitated from said inlet to said outlet.

1 17. A system as in claim 10 wherein the heat produced by said plurality of heat
2 producing elements is not removed by forced convection.

1 18. A system as in claim 10 wherein said heat spreading assembly comprises a
2 plurality of openings.

1 19. A system as in claim 10 wherein said heat spreading assembly and said heat
2 conducting assembly coupled to each other provide structural support for said system.

1 20. A thermal management apparatus for an electronic system, said apparatus
2 comprising:

3 a main body substantially enclosing said electronic system, said main body

4 having an inlet and an outlet;

5 a heat spreading frame forming a portion of said main body;

6 a first heat conducting frame in conductive communication with said heat
7 spreading frame, said first heat conducting frame in conductive and radiative
8 communication with a first plurality of heat producing elements;

9 a second heat conducting frame in conductive communication with said first heat
10 conducting frame, said second heat conducting frame in conductive communication
11 with a second heat producing element;

12 a third heat conducting frame in thermal isolation from said first and second heat
13 conducting frames, said third heat conducting frame in conductive communication with
14 a third heat producing element.

1 21. An apparatus as in claim 20 wherein said first plurality of heat producing
2 elements includes a microprocessor.

1 22. An apparatus as in claim 20 wherein the heat produced by said first plurality of
2 heat producing elements and said second heat producing element is passed to said
3 heat spreading frame and removed by natural convection from said heat spreading
4 frame, said inlet and said outlet providing a path for natural convection.